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ABSTRACT

This publication reports on a workshop to review and analyze existing practices in the design, implementation, and evaluation of curriculum in technical and vocational education (TVE). In the main working document, "Curriculum Development in TVE" (Tom Saluja), are the following: definition of curriculum development; description of how to measure the effectiveness of curriculum and models of curriculum development; and outline of the stages of curriculum development, implementation, and evaluation. Summaries of presentations describe experiences of countries in curriculum development, implementation, assessment, evaluation, and validation. These country papers are included: Czech Republic, Denmark, Germany, Greece, Japan, Mexico, Tanzania, and Uganda. A synthesis of country papers focuses on the following areas: education system, TVE system, responsibility for curriculum development, quality assurance, system of implementation, role of various bodies, constraints, and future trends. Eight major issues with proposed solutions are identified: national socioeconomic development and technological advances; relevance of curricula and competency-based vocational education; feedback from implementation and evaluation; quality of teachers/instructors; attitude of students to TVE; financial resources for curriculum development and delivery; legislation related to TVE curricula; and national institutional capacity in curriculum development. Future strategies and recommendations are listed. A participant list is appended. (YLB)

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ED 378 372

# UNEVOC

International Project on Technical and Vocational Education
(UNEVOC)

# International Workshop on Curriculum Development in Technical and Vocational Education

## *FINAL REPORT*

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**UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION**

**INTERNATIONAL PROJECT ON TECHNICAL AND VOCATIONAL EDUCATION (UNEVOC)**

# INTERNATIONAL WORKSHOP ON CURRICULUM DEVELOPMENT IN TECHNICAL AND VOCATIONAL EDUCATION

**HELD AT THE ILO INTERNATIONAL TRAINING CENTRE, TURIN, ITALY**

**30 AUGUST - 3 SEPTEMBER 1993**

**FINAL REPORT**

# I INTRODUCTION

## 1. Background

Although, the theoretical debate continues, it has been generally agreed that Curriculum should be seen as an overall plan for instruction. It consists of a statement of aims and objectives, of content in terms of theoretical knowledge, practical skills to be acquired, attitude towards work and necessary support materials to be used in its presentation. Curriculum Development has long been regarded as a core-component of Technical and Vocational Education and Training.

In the history of Technical and Vocational Education, a systematic approach to curriculum development is relatively recent. Due to lack of resources, experience and traditions, there have been certain tendencies in some developing countries simply to copy existing Curriculum materials from industrialised nations without proper adaptation to the local situation and needs, which has often proved to be inappropriate and expensive.

During the past decade, there has been a growing awareness of the need to bring greater innovation to the process of curriculum development in technical and vocational education to cope with the changing requirements for employment created by rapid socio-economic and technological developments.

UNESCO has been active in the field of technical and vocational Education for more than 30 years. In August 1992, the International Project on Technical and Vocational Education (UNEVOC) was launched. As an international project aimed at developing and improving technical and vocational education, UNEVOC is focusing on the exchange of information, the establishment of a network of participating institutions, and facilitating co-operation of high-level specialists at the national, regional and international levels. This workshop is the second activity in the Workplan of UNEVOC for 1993.

## 2. Aims and Objectives

(a) The Workshop will review and analyze the existing practices in the design, implementation and evaluation of curriculum, particularly in the development of competency-based curriculum, in the field of technical and vocational education and Training facilitating the exchange of experiences among the participating countries.

(b) The Workshop will identify some common trends and successful practices, based on the experiences revealed in the participants' discussion papers and their deliberations, which will be disseminated through the workshop report to other countries participating in the UNEVOC project.

## 3. Participants

The workshop which was held at the ILO International Training Centre, Turin, Italy from 30 August to 3 September 1993 was attended by specialists from **Czech Republic, Denmark,**

**Germany, Greece, Japan, Mexico, Tanzania and Uganda.** Each participant had practical experience in the field of curriculum development in technical and vocational education.In addition, each participant submitted a country report. Each report included:

- a brief description of the technical and vocational education system in the country;
- a review of methodologies used for curriculum development in technical and vocational education and training;
- current problems and possible situations;
- innovations in curriculum development in technical and vocational education to cope with new requirements from the world of work;
- future trends and issues in this field.

These presentations formed the basis of discussions of various models so far evolved and the benefits derived from them in providing quality training in technical and vocational Education. As a result of these discussions, various issues were raised with a view to optimizing the delivery in technical and vocational education systems. Solutions were suggested to assist the countries represented and for the benefit of the Member States. Recommendations have been made for future orientations and development of curricula for a variety of training needs in technical and vocational education. It is planned to hold similar workshops (within the framework of the UNEVOC Project) in different regions in order that the process of curriculum development be optimized to meet regional needs.

It is hoped that the experience of the participants reflected at the workshop, along with the guidelines recommended, will help the Member States in developing their own strategies for the improvement of technical and vocational Education. UNESCO is proposing to follow-up this workshop by regional activities to promote further work in this area.

## IV MAIN WORKING DOCUMENT: CURRICULUM DEVELOPMENT IN TECHNICAL AND VOCATIONAL EDUCATION

*(Philosophy, Objectives, Development, Implementation Experience and Evaluation of Curriculum for Technical and Vocational Education)*
*(prepared by Dr. Som Saluja, UNESCO Consultant)*

### (i) INTRODUCTION

1. Preparing youngsters for the realities of earning a living is a responsibility shared by many different groups of people both inside and outside the education sector. All are aware that it is vital to ensure that the trainees gain the best possible academic or vocational qualifications, in order to provide them with a realistic chance of succeeding in today's highly competitive job market. The quality of training provided should be judged above all by its impact - or potential impact - on practice. If nothing changes in the training place as a result of research and experience, are we justified in calling it *Effective Education and Training*?

2. As we are aware, for the above reasons, new approaches of effective training and new strategies in their implementation have been developed during the past many years in improving the quality of training imparted. The aim of the training process is to help the development of competencies to carry out various industrial operations effectively and competently. This is achieved through careful implementation of well developed Curriculum.

## (ii) CURRICULUM DEVELOPMENT

3. The word **Curriculum** has the meaning of **educational path** and describes the learning process in a much more comprehensive and complex fashion than is possible with Plans of learning content or learning material. These days, curriculum development is oriented towards the **learner** - the student/trainee and his learning process than towards the content of learning. Unfortunately, there is no precise definition of just what a Curriculum is? The increasing amount of research and literature in this field has been accompanied by an increasing fuzziness in the term "curriculum". For this reason, one adopts the term curriculum instead of **teaching plan**. In such an approach, not only teaching material and its organisation are analyzed, but also several interconnected areas of curricular decision-making, namely the goals, subjects and organisation of learning are stressed and new comprehensive trades researched.

4. A curriculum, in contrast, provides information on the following aspects of learning:

- *At whom is the educational processes aimed?*
- *What goals and qualifications are to be achieved?*
- *What contents are to be learned?*
- *What teaching methods and aids are to be used?*
- *How is the result to be tested?*

## (iii) EFFECTIVENESS OF CURRICULUM

5. The effectiveness of a training system, dependant on a well developed curriculum, must be measured by the extent to which:

- it is able to attract the young generation into the occupation of the future and skills which employers need
- it is able to deliver not only technical contents (technical skills) but also help students to learn how to cope with new challenges (coping skills) and prepare them for life long learning
- it is able to provide people with the basic set of skills it takes to transfer from one job or area of work to another, once they have entered the workforce and

- it offers open access to all without the constraints of entry requirements.

## (iv) MODELS OF CURRICULUM DEVELOPMENT

6. Curriculum developed for vocational training should not only meet the goals and objectives of training but also be implemented effectively. There have been a variety of models that have been tried in the past and hence curriculum development has either been in the subjective or objective mode. But recently the trainers and educationalists have developed competency based curriculum which can be implemented using multi-media educational resources that have now become available. Such an approach allows open entry/open exit philosophy of Curriculum implementation to be adopted to allow the trainees to learn at one's own pace in the most flexible way.

7. In the competency-based individualised and multi-mediat curriculum development, the subject matter has been divided into modules. The modules are studied through workstations. The Learning process is student-centred and not teacher-centred. The modules are sub-divided into **learning elements**. These are learnt by carrying out **tasks** which help to acquire employable skills. This approach of curriculum development, obviously, assumes the availability of resources for its implementation. Is it always true - remains to be verified? The industrialised nations can afford such a capital investment but it may be a problem for the developing countries.

## (v) CURRICULUM DEVELOPMENT, IMPLEMENTATION AND EVALUATION

8. Experience of implementation of comprehensive, long-term curricula has shown that the people who develop them are not the people who put them into practice. This often leads to misunderstanding and suspicion. People who are engaged in the development area are often accused by "practitioners" of understanding nothing about the practical aspects and of drawing up totally impracticable plans. In contrast, the practitioners are often accused of being hostile to reform, ignorant of theory and incapable of new sights into practice. In reality, such accusations have a grain of truth to them. Everywhere we can observe remoteness from practice on the one hand and unfamiliarity with theory on the other. For this reason, attempts have been made to develop models in which the strict division between imposition and execution is abolished.

9. The problems in curriculum development can be illustrated as belonging to two circles (Fig.1). One circle represents problems involved with the explanation and justification of the goals and contents of learning and the other the areas of execution and evaluation of educational measures. The problem complexes can now be marked on the circles and displayed in sequence.

10. The individual stages of curriculum development in the first circle can be labelled roughly as follows:

(i) **situation analysis**

- orientation towards the learners and their needs, previous education, aptitude, employment opportunities (social demand approach),

orientation towards social needs, such as need for qualified skilled workers, regional development (manpower approach).

**main considerations:**

who is the curriculum aimed at?

what individual and social needs are to be met?

(ii) **preconditions**

- establishment of training level, tests, final examinations,
- gaining of (state) recognition and eligibility for financial support,
- relating of the particular curriculum, to the educational system as a whole.

**main considerations:**

how can general recognition of and support for the training be secured?

can the planned course be fitted in as a "building block" within a comprehensive educational system?

(iii) **didactic analysis**

- selection and justification of contents,
- determination of what specialised scientific and technological fields should be taken into consideration,
- choice of a didactic starting point.

**main considerations:**

which of the justified contents are to be learned?

what point of entry will provide good access to the contents?

(iv) **goals of learning and training**

- formulation of objectives and qualifications,
- assignment to areas of learning, levels of objectives and training levels,
- arrangement of objectives.

**main considerations:**

what goals, abilities, attitudes and skills is the curriculum to impart?

how can the objectives be ranked and arranged?

in the fourth problem-area the two circles intersect. Having been justified, the curriculum now passes to the stage of implementation and of evaluation in practice. The point of departure is orientation towards objectives and the contents embedded within them. This is followed by:

(v) **organisation of learning and training**

- creation of learning segments,
- establishment of method plans and media plans,
- working out of a timetable (for days and weeks).

**main considerations:**

how can the objectives and contents be structured into learning and time units?

what methods and media can be used to help the learning process move forward towards the goals?

(vi) **teaching and learning process**

this position describes the implementation of the Curriculum:

- the teaching (training) is carried out,
- the course takes place.

(vii) **evaluation**

- the leaning process is tested,
- the effectiveness of the way in which the Curriculum has been carried out is tested,
- the conformity of content and goals is tested.

**main considerations:**

in what ways has the curriculum been successful?

to what can deficiencies in the results of the training be attributed?

to the way the curriculum is designed?

To the way it was carried out?

To the students?

11. It can thus be seen that evaluation is not confined to testing of the students, but also applies to possible faults in the planning or implementation of the Curriculum. This stimulates continual revision of the learning programme. In conclusion, it should be noted that the above remarks are an attempt to represent and classify the complicated business of educational planning and implementation in simplified form by using a two-circle model.

### (vi) SOME CONCLUDING REMARKS

12. Modern technologies and ecological demands of the workplace require a skilled work-force with good higher order skills - contextual knowledge, reasoning, analytical and critical thinking skills etc. In most cases, technical know-how alone is no longer sufficient. Proficiency in and ability to cooperate and communicate with co-workers, to process new information and apply it to make decisions and take action on one's own initiative, are becoming ever more important. Staff members must be more open for new developments, cope with new challenges, and be able to assume responsibility for what they do in their respective areas of work. These essential skills also include the ability to cope with changing challenges by learning new skills and becoming a lifelong learner including:

- communication and cooperation skills
- application of learning techniques and cognitive work-related skills
- independent judgement and sense of responsibility
- ability to cope with stress

What we need are skilled workers not only with a high level of technical skills but also general coping skills. *It remains to be seen as to which of the models developed so far meets the vocational training needs precisely to help the workforce to meet the ever changing and complex demands emerging from modern technology?*

## III SOME ASPECTS OF CURRICULUM DEVELOPMENT, IMPLEMENTATION AND EVALUATION

1. Through the presentation of the Main Working Document, the following aspects of curriculum development, implementation, assessment techniques and evaluation emerged:

(i) **definition/early developments in curriculum development:** including trends so far in curriculum development, benefits of various methods and models, common trends and effect of socio-economic considerations;

(ii) **contents of curricula:** including educational guidance, instructional materials, supporting educational aids and equipment;

(iii) **experience**: gained through development/implementation/evaluation for a variety of training needs (initial training/further(higher) training);

(iv) **guidelines for future development:** for effective education and training in technical and vocational Education to meet a variety of training needs;

(v) **future trends:** including curricula content for technical (skills) training and coping skills;

(vi) **infrastructure for curriculum development and implementation:** to help delivery and improve quality of training;

(vii) **financial responsibility:** funding from central/regional Governments, social partners, possible contribution from trainees;

(viii) **generalization:** including regionalization, scope and relevance of a prototype curriculum.

## IV SUMMARY OF COUNTRY PAPERS - CASE STUDIES

This section summarizes the presentations made by the participants describing their country's experience of curriculum development, implementation, assessment, evaluation and validation. This helped the discussion on various aspects of curriculum development in Technical and vocational education, models and strategies followed, modes of funding, collaboration between training institutions and industry (including various national bodies) etc highlighted in the keynote paper and summarised above. The following is a summary of the presentations made:

### CZECH REPUBLIC

(1) The technical and vocational education system followed in the Czech Republic, despite numerous partial amendments, still bears some characteristics of a country with a centrally run economy. A positive feature of contemporary situations is the considerable openness of the education system to receive external stimuli and a propensity to modify a traditional approach in favour of implementing new educational qualifications.

(2) The Ministry of Education has the prime responsibility for the development and approval of the curricula developed and implemented in various institutions. The

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actual problem-solving of development of the curricula is delegated to individual departments of the Ministry depending on their orientations.

(3) The Ministry of Education has two research institutes which engage in various aspects of education and training at basic and secondary schools. It is professed that these research institutes participate in the development of flexible competency based curriculum that helps to train people for different skills demanded by various job situations. Changes in curricula are implemented on the basis of actual economic and social developments.

(4) It is understood that development and implementation of curricula in Technical and Vocational subjects requires enhanced involvement of employers' associations, enterprises and Chambers of Commerce and injection of large amounts of money, which if not available, could affect the quality of training provided.

**DENMARK**

(1) In Denmark, during the last decade, the labour force has increased considerably, especially due to women entering the world of work. The political background for developing the educational system must be considered in connection with increasing unemployment. This is mainly due to general economical problems and introduction of technology within all sectors of society, which has resulted in reduced manpower.

(2) The Danish system of vocational education and training (including further vocational education) is considered to be of high quality in which the social partners actively participate. The vocational education and training system is based on a principle of **dual system**. The further vocational education system is college-based. Vocational education and training, further vocational education and upper-secondary education all take place in the same technical colleges. This is to secure an overall high quality of training in education and developing curricula in conformity with the Danish decentralised system.

(3) The system of Curriculum Development is controlled centrally with tremendous local (college level) flexibility. A well defined system of quality assurance and compatibility amongst various college developments is practised under the authority of the Ministry of Education. The process of curriculum development has positive contributions from employers and employees participating in various advisory councils and committees. This has helped in the development of curricula to meet a variety of training needs. Similarly, the technical colleges are advised by local social partners.

(4) The Ministry of Education includes well organized inspectorates with an associated infrastructure to maintain and monitor the quality of skills training provided in the country.

(5) Technical colleges are responsible for implementation of curricula. They can seek advice from consultants who are part of the Ministry of Education.

(6) The country has a Council for Vocational Training whose membership is shared by employers and employees. This Council deals with the overall governing of the Vocational Education system (skilled level), and advises the Ministry on general matters. For each group of courses, there is a committee (composed of representatives of employers and employees) making decisions and advising the Ministry concerning objectives and structure of Vocational Education and Training courses. Additionally, technical colleges also have their own Local Education Committees to advise them on the educational programmes provided.

(7) Denmark has well structured mechanism for curriculum development and implementation, which is appropriately financed by the Ministry of Education.

(8) The process of decentralization whereby the responsibility for curriculum development is passed further down from the Ministry to the regions/technical colleges is still going on. The political aim is to develop colleges with expertise able to play an important part in curriculum development in a very flexible system.

**GERMANY**

(1) The philosophy of imparting technical and vocational education in Germany is that vocational training should be closely linked, as much as possible, to practice and should take place to a substantial degree in companies and administrative organisations. In the **Dual System** of vocational training, young people receive training in companies for three to four days per week and for one or two days in a vocational school.

(2) Access to vocational training is open to all. It is not conditional on any specific school-learning certificates. Approximately 70% of all school leavers go into training in the Dual System.

(3) The Dual System of vocational training pre-supposes the joint responsibility and cooperation of all those involved in the world of training and work viz employers, employees, Government and education authorities who fully co-operate in every possible way. Such co-operation is subject to legal regulations and has proved very successful.

(4) Advanced vocational training takes place in an open system in which training is offered by various organisations (companies, associations, schools etc). To meet training demands on a long-term basis binding legal directives are issued by the Federal Ministry of Education and Science.

(5) The responsible Ministry, e.g. the Federal Ministry of Economics, issues training regulations with the approval of the Federal Ministry of Education and Science.

(6) The Federal Institute for Vocational Training prepares the training regulations. This involves participation from employers' associations, trade unions and the relevant Federal Ministries. The training regulations are harmonized with general school curricula in the regions.

(7) The aim of the training regulations is, despite the differences between the training needs of the individual companies, to ensure standardised Vocational Training in companies with equivalent requirements throughout the companies.

(8) New training regulations, changing content of curricula, need for assessment for better examination system require better qualifications of instructors, teachers and other personnel involved in the development and implementation of Technical and vocational education and training. Considerable importance is being given in Germany to improve such qualifications and help the staff to upgrade themselves.

(9) Information technology is being progressively introduced in the Curricula to prepare trainees for a variety of changing work situations. In addition to skilled competencies, social and methodological considerations are also covered in the curricula.

**GREECE**

(1) A profile of the educational system existing in the country was explained and the status of technical and vocational education pointed out.

(2) Curriculum development is the responsibility of the pedagogical institute established under the auspices of the Ministry of Education.

(3) Most of the available technical and vocational education curricula is broad-based and comprehensive. The subject areas covered include, in addition to technical, business and economics-related subjects.

(4) In 1992, the Government legislated the national system for vocational Education and training under which the Organisation of Vocational Education and Training (OVET) was set up. OVET is responsible for all levels of Technical and Vocational Education in Greece and has established 32 Vocational Training Institutes to provide training according to regional needs.

(5) Through the activities of OVET, the employers, trade unions and other social partners play an active role in curriculum lanning, development, evaluation and creditation.

(6) To improve the quality of vocational qualifications and training imparted, new assessment system for certification is being developed.

(7) A number of revisions are being made in the currently-available curricula with a view to implementing competency-based curricula, both for initial and further training.

(8) In Greece there is an infrastructure to provide technical teacher training with a view to upgrading the technical and pedagogical skills of the instructors.

(9) To assist various committees involved in the development and delivery of curricula, occupational profiles are being established and the industry, as well as other social partners involved in such revisions.

**JAPAN**

(1) The modern education law in Japan is established on the basis of the principle of equal opportunities for all.

(2) Upper secondary school courses may be broadly classified into two types: general and specialized. The latter may be further classified: agricultural, industrial, commercial, fisheries, home economics, nursing, science, mathematics, english and other courses.

(3) Colleges of Technology were introduce in 1967 in order to provide lower secondary school graduates with five-year continuous education. Special training colleges and other schools play a unique role throughout the entire Japanese education system. These establishments offer a variety of practical Vocational and Technical Education programmes in response to the diverse demands of a changing society.

(4) The Ministry of Education lays down national standards for curricula at all school levels in order to ensure optimum national level of education based on the principle of equal educational opportunities for all. Broad guidelines for the objectives and standard content of each school subject are specified in the **study course** for each of the four school levels. The study course is prepared by the Ministry of Education and the recommendations of the Curriculum Council are promulgated by the Minister.

(5) The Curriculum Council advises the Ministry of Education on Curriculum Development as well as its organization and implementation.

(6) In order to assist the development of the trainees in the new emerging technological areas and to lay more emphasis on basic and essential knowledge, a number of revisions have been made in the existing curricula. It is hoped that such revisions will help the technical and vocational education system graduates to cope positively with the changes in society.

**MEXICO**

(1) Technical education in Mexico is coordinated by the Assistant Secretariat for Technical Education and Research which provides a number of activities in the country in order to provide various types of educational services including advising on technical and vocational education.

(2) The Technical Education and Research Assistant Secretariat is assisted by various private and social enterprises in developing curricula for technical and vocational education and training.

(3) Formal training involving classroom instruction, is the responsibility of the General Directorate of Training Centres. This Directorate also assists in the provision of extension programmes for upgrading of skills.

(4) Emphasis is given on monitoring the quality of training provided and

recommendations are made by various bodies to improve training programmes.

(5) Efforts are made to develop training standards for implementation in order to enhance the quality of training provided.

(6) The country places considerable emphasis on human resource development and hence efforts are being made to improve the occupational profile required by the industrial sector.

(7) Both the Federal as well as State Governments contribute towards the financing of technical and vocational education.

**TANZANIA**

(1) Tanzania has a variety of institutes offering technical and vocational education and training in the country. The Government is putting in efforts to develop training standards for implementation in order to improve the quality of training provided at all levels.

(2) To meet growing demand for technical and vocational education in the country, the Government has set-up the National Technical Training Advisory and Co-ordinating Council (NATTAC).

(3) Financial constraints seem to affect curriculum implementation. Inadequacy of teaching materials, text books and equipment severely affect curriculum delivery. Steps have been taken to arrest the situation. Teachers and other experts have been encouraged to write books and use locally available materials for training.

(4) Curriculum Development for Technical and Vocational Education and Training in Tanzania is administered by three ministries: the Ministry of Education and Culture, the Ministry of Labour and Social Welfare and the Ministry of Higher Education, Science and Culture.

(5) The National Technical Training Advisory and Coordinating Council (NATTACC) ensures that technical programmes are adequate, and are efficiently and economically organised to meet the nation's needs and that they are appropriate in form and content in relation to the needs of the economy bearing in mind the nation's objectives and priorities.

**UGANDA**

(1) The basic structure of formal education in Uganda consists of four levels namely: primary, lower secondary, upper secondary and university. The four levels form a single track structure of 7-4-2-3 years with minor variations in length of particular courses after the primary cycle.

(2) Technical and Vocational Education (TVE) consists of technical institutions under the

Ministry of Education and Sports. Vocational Training Centres are under the Ministry of Labour and Social Affairs. Technical institutions consist of technical schools at the lower level, technical institutes, technical colleges and Uganda Polytechnic Kyambogo (UPK) at the apex. These institutions train artisans, craftsmen and technicians.

(3) Efforts are being made in Uganda to review all the educational programmes and processes with a view to addressing the needs of the country. In TVE, efforts are being directed towards rehabilitating the existing infrastructure, re-structuring the sub-sector and reviewing curricula to align these with production-based requirements.

(4) Curriculum development in Uganda is centralized and is the responsibility of the National Curriculum Development Centre (NCDC), which was established in 1974. NCDC is mandated to play a pivotal role in improving the quality of education and re-designing the courses at various levels (other than the universities) to meet the objectives of technical and vocational education. Due to limited physical, human and financial resources, NCDC is not able to meet its objectives fully.

(5) Course curricula for vocational education are, however, the responsibility of the Directorate of Industrial Training and the Industrial Training Council (ITC). The Directorate carries out a needs assessment through occupation surveys and job analysis while course curricula are done, based on the analysis, by a team of technical experts . ITC on the other hand ensures quality efficiency and relevance of the programmes.

(6) In addition to early training, curriculum is also available for skills upgrading as the country is embarking upon a policy of vocationalization. Current practices in curriculum development in Uganda are being recognized as being inadequate as these tend to exclude other social partners, especially the employers. Industry/training institution partnership is being encouraged through seminars and workshops.

(7) Problems affecting progress in the process of curriculum development include lack of adequate local capacity in terms of trained and motivated Curriculum developers, teachers and insufficient financial resources.

(8) Due to the developing economic situation in Uganda, there are a number of issues that the country needs to address with a view to developing a curriculum which would precisely meet the requirements of all sectors of society. Different socio-economic situations make these phenomena all the more difficult.

(9) Technical and Vocational Education (TVE) is recognized by the Government as being the key to the nation's economic, scientific and technological development. The main objective of TVE is, therefore, seen as the need to train the nation's workforce to meet the demands of the world of work including self-employment.

(10) During discussions it was obvious that approach to curriculum development needs to be continuously re-adjusted to address the changing needs of the economy.

## V SYNTHESIS OF COUNTRY PAPERS

1. **Description of the Education System:** the countries represented have a system of education in which technical and vocational education is introduced at the senior secondary level unless government policy is to deliberately offer this type of education as a part of community education (formal or non-formal) training.

2. **Technical and Vocational Education System:** most countries use technical and vocational education curricula for initial/further training, upgrading skills etc. Training is either exclusively provided in an educational establishment or through partnership with industry/enterprises (Dual System).

3. **Responsibility for Curriculum Development:** from the case studies presented, it was obvious that responsibility for curriculum development predominantly rests with the Ministry of Education or a central organization in the country. To facilitate training at regional levels and to meet local needs, the responsibility may be passed on to regional directorates or specially developed units. In each case, an attempt is made to co-ordinate the process of curriculum development for the sake of uniformity of training in the country. Social partners (employers' organizations/trade unions/professional bodies etc.) assist in this process.

4. **Quality Assurance:** experience shows that it is very vital to ensure that there are no regional variations or other factors which may affect the quality of training provided, although, the system should offer flexibility in approach to meet regional training needs. Some countries have specially established inspectorates to control quality of delivery.

5. **System of Implementation:** most curricula are implemented in schools/industry through well developed resources (equipment/trained instructors and facilities). This requires substantial investment which can only be made by well developed nations.

6. **Role of Various Bodies - Social Partners:** participation by various socio-economic groups has helped to develop and effectively implement curricula.

7. **Constraints:** financial and organizational aspects of a country's development can impose constraints on the process of curriculum development and the quality of delivery.

8. **Future Trends:** there seems to be an agreement to follow a system of curriculum development that offers competency-based training. This requires considerable investment in equipment and staff development. Due to limited resources at the disposal of certain governments, such an approach may be difficult to afford and hence traditional methods of delivery may have to be relied upon for vocational education and training.

## VI <u>MAJOR ISSUES AND POSSIBLE SOLUTIONS (GUIDELINES)</u>

Through presentation of the country papers, the following eight major issues were identified and possible solutions were proposed:

(1) **consideration of national socio-economic development and technological advances.**

- The ultimate objective of technical and vocational education is to train qualified technical personnel and skilled workforce to meet the requirements of the society. National socio-economic development and technological advances do have great impact on curriculum development of technical and vocational education.

- In many countries, the trend is an overwhelming shift of employment opportunities from the production industries towards the service industries. This places great demand on the preparation of curricula for the new emerging occupations within the service industries, which are knowledge and skill-intensive.

- The current trends in privatisation in many Member States have increased opportunities for self-employment, requiring that entrepreneurial skills be included in curricula.

- Rapid advances in technology and wide application of computer techniques necessitate that the workforce be broadly skilled with greater flexibility. The curricula required should include skills desirable for a number of occupations.

- In order to meet rapid technological and socio-economic changes, Technical and vocational education curricula should be in a modular format, competency-based, individually-paced flexible entry and exit, skills and knowledge being broad-based to specializeD etc.

(2) **Relevance of curricula and competency-based vocational education**

- curriculum should reflect the training needs of the job market. The approach of "Competency-based Vocational Education" possesses great potential to meet this requirement.

- competency-based vocational education has been defined as an education system emphasising the specifications, learning and demonstration of those competencies (knowledge, skills, behavioural) which are of prime importance for a given task, activity or career. The delivery of this system is student-oriented and individually-paced.

- The principles of this approach including specification, and involvement of industry in job analysis should be encouraged in the developing countries.

- It should be mentioned, however, that the student-oriented and individually-paced nature of competency-based education delivery requires heavy investment for equipment and re-training of teachers/instructors. The availability of both human and financial resources should be taken into consideration and some degree of flexibility is recommended.

- Information flow and exchange of experience on competency-based education from the industrialized to the developing countries should be encouraged.

(3) **Feedback from implementation and evaluation**

- The responsibility for curriculum development is normally with the central government. There is, however, a trend towards local flexibility which should be encouraged, thereby allowing institutions and teachers/instructors to cope with local conditions.

- A system involving central and local governmental departments should be established to evaluate the curriculum implementation process, aimed at ensuring the quality of the programmes offered.

(4) **Quality of teachers/instructors**

- For various reasons, teachers/instructors in many countries have not been directly involved in the process of curriculum development. To make the curriculum efficient and more relevant to the needs of students, the participation of teachers/instructors is essential. A mechanism should be established to ensure their active involvement. Apart from initial training, there is need for continuous training of instructors in technical and vocational education with more pedagogical and technological skills.

- New ideas of curriculum development and delivery (e.g. competency-based education and training) change the role of teachers/instructors to **facilitators** (learning managers). Their technical qualifications also need to be upgraded.

- Teacher-training Programmes should, therefore, include the content of curriculum development on new approaches and methods concerning teachers/instructors' attitude to their role, which needs to be changed to cope with these new ideas. This should apply to both long-term non-formal continuous training and short-term in-service training.

(5) **Attitude of Students to Technical and Vocational Education**

- In many countries, if not all, the second-class status of technical and vocational education makes young people hesitant to choose technical and vocational education as their career preparation. To make technical and vocational education more attractive, curriculum should be designed to make articulation between technical and vocational education and higher education possible.

- Well-prepared vocational and career guidance should be available to technical and vocational education students making them fully aware of the nature of the curriculum, choices available and possible career opportunities.

- Transferability of skills from basic to advanced levels and flexible opportunities should help to enhance the profitability of available curricula.

(6) **Financial resources for Curriculum Development and delivery**

- curriculum sevelopment, delivery and innovation require relatively large

financial inputs. This burden should be shared by the Government and all social partners.

- Additional funds should be allocated to provide suitable equipment and instructional materials.

(7) **Legislation with regard to Technical and Vocational Education curricula**

- Experience has shown that curriculum development should be included in national laws pertaining to technical and vocational education in order to ensure the involvement of social partners.

- A legislated national body consisting of representatives from the Government, education, industry and other social partners should be established to provide guidance on the development and implementation of curricula for Technical and vocational Education.

(8) **National Institutional capacity in Curriculum Development**

- Availability of resources to develop and implement appropriate and relevant curricula is essential. However, there should be a national framework which encourages such a process. Additionally, national capacity needs to be developed by creating forums where all those involved in the process of curriculum development meet to discuss problems of common interest.

- Experience shows that developing countries have traditionally imported ready-made curricula which are not always totally relevant to the national training needs of the country. If the country has the national capacity, staff (trained abroad, if necessary) can produce such curricula ensuring that such a development meets the national training needs precisely.

## VII FUTURE STRATEGIES AND RECOMMENDATIONS

(1) Co-operation between social partners and the government should be legislated. This legislation should include and clarify the role of the social partners in curriculum development, delivery and financing of technical and vocational education.

(2) There should be a general consensus of the requirements for each occupation. Such an occupational profile should form the framework of the curriculum at the national level. Curriculum implementation and delivery should then be decentralized to cover varying regional needs.

(3) The occupational profile and curriculum framework should cover a list of competencies, standards and work attitudes. It should also specify the level of training, duration, assessment and certification.

(4) Staff exchanges should be encouraged and promoted between enterprises and educational institutions. Incentives should be provided in order to motivate and attract experienced personnel from enterprises to work as instructors in Technical and Vocational Education.

(5) Methods of curriculum delivery should be compatible with the national resources, social attitudes and other work ethics.

(6) It will be useful to investigate various methods of curriculum delivery such as training within both enterprises and educational establishments etc. to recommend appropriate balance between theoretical, practical and other integrative aspects of curriculum. Case studies may be useful in this regard.

(7) The trainee is an important aspect of curriculum delivery. Career and vocational guidance should be provided along with alternatives to make his involvement in technical and vocational education both interesting, as well as gainful.

(8) A network of national training institutes and those involved in curriculum development and implementation should be established in the country. It will be useful for such a network to interact with similar international organizations/groups.

(9) In line with the mobility and job situations in a country, the curriculum delivery should define standards and levels of achievement which should be transferable. Such flexibility should allow mobility in labour force.

(10) To enable the social partners to participate effectively in the process of curriculum development and advice, it is desirable that various groups are trained in the principles and methods of technical and vocational education.

(11) Competency-based training helps to acquire skills necessary to meet various job profiles. Teaching materials and methods should be developed compatible with the availability of the national resources.

(12) Certification in vocational education should be rationalized in a country. Responsible groups for advice on assessment and examination standards should also be established.

(13) Research can play a very important role in the process of curriculum development, the role of which should be defined.

(14) Regional networks should be established to consider future strategies and recommendations made here. This will help to develop further various aspects of curriculum development and implementation identified in this workshop.

The workshop deliberated on the role that UNEVOC should play in developing Curriculum and assisting various nations to undertake this activity to meet the national training needs. Taking into account the needs and availability of resources in the developing countries, the Workshop recommended that the proposed UNEVOC activities on the development of prototype curricula on selected subjects at the regional level are feasible only when the emphasis is on:

- curriculum development methodologies which include local socio-economic considerations, labour market information analysis, training courses, preparation of teaching materials and equipment, and appropriate teacher training;

- training of curriculum developers at both local and national levels. These trained experts may play a key role in their own country's curriculum development in

technical and vocational education in the future.

The participants strongly felt that it would be far more significant for the developing countries to assist them in the improvement of curriculum design rather than just provide them with some ready-made prototype curricula.

It was suggested that UNESCO should organize regional seminars in the coming years in order to train national curriculum developers with new approaches. During this process, an open prototype curriculum on a selected subject could be formulated as an example.

**Appendix 1**

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